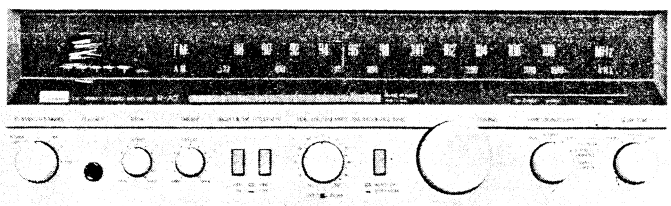
SERVICE MANUAL

STEREO RECEIVER

SANSUI R-30/50/70



Sansui

SANSUI ELECTRIC CO., LTD.

SPECIFICATIONS

Audio section

Power output <R-30>
Min. RMS, both channels driven, from 40 to 20,000 Hz, with no more than 0.09 % total harmonic distortion.
25 watts per channel into 8 ohms

Power output <R-50>
Min. RMS, both channels driven, from 30 to 20,000 Hz, with no more than 0.09 % total harmonic distortion.
45 watts per channel into 8 ohms

Power output <R-70>
Min. RMS, both channels driven, from 20 to 20,000 Hz, with no more than 0.08 % total harmonic distortion.
65 watts per channel into 8 ohms

Total harmonic distortion <R-30/50>
. . . . . less than 0.09 % at or below rated min. RMS power output

Total harmonic distortion <R-70>
. . . . . less than 0.08 % at or below rated min. RMS power output

Frequency response (at 1 watt)
. . . . . 10 to 50,000 Hz, +1 dB, −3 dB

Input sensitivity and impedance (at 1 kHz) <R-30>
PHONO . . . . . 2.5 mV/47 kilohms
TAPE PLAY . . . . 150 mV/47 kilohms

Input sensitivity and impedance (at 1 kHz) <R-50/70>
PHONO . . . . . 2.5 mV/47 kilohms
AUX, TAPE PLAY . 150 mV/47 kilohms

Output level (at 1 kHz)
TAPE REC . . . . . 150 mV

Hum and noise (short-circuit, A-network)
PHONO . . . . . 73 dB

FM section

Tuning range . . . . . 88 to 108 MHz

Usable sensitivity
Mono IHF . . . . . 12 dBf (2.2 μV)
DIN . . . . . 1.1 μV
Stereo IHF . . . . . 22 dBf

50 dB quieting sensitivity
Stereo . . . . . 38 dBf

Signal to noise ratio (at 65 dBf)
Mono . . . . . 72 dB
Stereo . . . . . 67 dB

Distortion (at 65 dBf)
Mono . . . . . less than 0.5 % at 1,000 Hz
Stereo . . . . . less than 0.8 % at 1,000 Hz

Stereo separation . . . . 35 dB at 1,000 Hz

Antenna input impedance
. . . . . 300 ohms balanced
75 ohms unbalanced

AM section

Tuning range . . . . . 530 to 1,600 kHz

Usable sensitivity (bar antenna)
. . . . . 50 dB/m (300 μV/m)

Signal to noise ratio . . 46 dB

Others

Power voltage . . . . . 110 ~ 120, 220 ~ 240 V (50/60 Hz)
For U.S.A. and Canada
. . . . . 120 V (60 Hz)

Power consumption <R-30>
. . . . . 100 watts 120 VA Rated

Power consumption <R-50>
. . . . . 160 watts 190 VA Rated

Power consumption <R-70>
. . . . . 230 watts 280 VA Rated

Dimensions . . . . . 430 mm (16-15/16") W
147 mm (5-13/16") H
252 mm (9-15/16") D

Weight <R-30> . . . . . 5.6 kg (12.3 lbs.) net
6.5 kg (14.3 lbs.) packed

Weight <R-50> . . . . . 6.7 kg (14.8 lbs.) net
7.6 kg (16.8 lbs.) packed

Weight <R-70> . . . . . 7.5 kg (16.5 lbs.) net
8.4 kg (18.5 lbs.) packed

* Design and specifications subject to changes without notice for improvements.

SANSUI

COMMON PARTS LISTS FOR RESISTORS & CAPACITORS

<Issued on June, 1987>

On this parts list, ten sorts of resistors, & seventeen sorts of capacitors, which are commonly used in the Sansui products, are listed. Since these resistors & capacitors on this list are omitted from service manual, please confirm shape, resistance or capacitance value, schematic diagram, and this list on the parts when replacing the parts with trouble. In addition, please pay attention to fill out the name and stock number (8 digit) of parts when order.
With the issue of this parts list, please abandon the "Common Part List for Resistance & Capacitors" previously issued.

Notice:
Capacitors & Resistors on this parts list include one not to be used in Sansui products, therefore they can not be supplied although ordered.

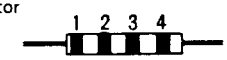
◆ Resistors

How to read color cord:

Carbon resistor

1, 2 } Constant

Solid resistor



3 Multiplier
4 Tolerance (%)

For example:
1. Brown 2. Red
3. Orange 4. Silver
= 12 x 10^3 (Ω) ± 10%
= 12kΩ ± 10%

{ Gold: ± 5%
Silver: ± 10%
Colorless: ± 10%

Color	1	2	3	4
Black	0	0	10^0	
Brown	1	1	10^1	
Red	2	2	10^2	
Orange	3	3	10^3	
Yellow	4	4	10^4	
Green	5	5	10^5	
Blue	6	6	10^6	

Color	1	2	3	4
Purple	7	7	—	
Gray	8	8	—	
White	9	9	—	
Gold	—	—	10^{-1}	± 5%
Silver	—	—	10^{-2}	± 10%
Colorless	—	—	—	± 20%

◆ Symbol mark on schematic diagram & abbreviation on service manual

Abbreviation	Name	Symbol
C.R.	Carton Resistor	none
F.R.	Fusing Resistor	
N.I.R.	Non-Inflamable Resistor	
Ce.R.	Cement Resistor	
P.R.	Printed Resistor	
Chip R.	Cylindriecal Type Chip Resistor	

Abbreviation	Name	Symbol
F.C. (m)	Film (Maylar) Capacitor	(m)
Ta.C.	Tantalum Capacitor	(Ta)
P.C.	Polystyrene Capacitor	
C.C	Ceramic Capacitor	
C.T.	Ceramic Capacitor Temperature Compensation	T
E.C.	Electrolytic Capacitor	
E.B.L.	Low Leak Electrolytic Capacitor	
F.C. (P)	Polypropylene Film Capacitor	(pp)
Chip C.	Chip Ceramic Capacitor	

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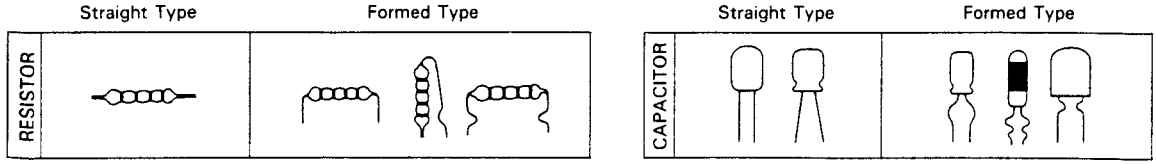
NOTE

◆ Common resistors and capacitors in this parts list substitute for other types of resistores and capacitors.

1) The following list shows relations between original and substitution parts.

COMMON RESISTORS (Substitute Resistor)	ORIGINAL RESISTOR
•Carbon Resistor 1/6W, Tolerance ±5% (J)	•Printed Resistor
•Carbon Resistor 1/3W, Tolerance ±5% (J)	•Solid Resistor 1/4W
•Cement Resistor 5W, Tolerance ±10% (K)	•Cement Resistor 3W
•Low Leak Electrolytic Capacitor 50V.....	•Low Leak Electrolytic Capacitor 25V

2) There are some types of lead wires of resistors and capacitors. One is straight lead wire type, and others are formed lead wire type.
As the straight lead wire type is selected for common resistors and capacitors, please substitute the straight lead wire type for the formed lead wire type.



3) Standard resistors & capacitors supplied as substitute (on this list) may be different in configuration and color, from those used in set.

1. RESISTORS

1-1. Carbon Resistor 1/8W, Tolerance ±5% (J)
<Cylindrical Type Chip Component>

Value (Ω)	CHIP 1/8W	C.R. 1/6W	C.R. 1/4W	C.R. 1/3W
	Stock No.	Stock No.	Stock No.	Stock No.
0.0	46741100			
1.0			48006000	00249000
1.1			48006100	00249700
1.2			48006200	00250400
1.3			48006300	00251100
1.5			48006400	00251800
1.6			48006500	00252500
1.8			48006600	00253200
2.0			48006700	00253900
2.2	**46741200**	**46471100**	**48006800**	**00254600**
2.4	46741300	46471200	48006900	00255200
2.7	**46741400**	**46471300**	**48007000**	**00255800**
3.0	46741500	46471400	48007100	00256400
3.3	**46741600**	**46471500**	**48007200**	**00257000**
3.6	46741700	46471600	48007300	00257600
3.9	**46741800**	**46471700**	**48007400**	**00258200**
4.3	46741900	46471800	48007500	00258800
4.7	**46742000**	**46471900**	**48007600**	**00259400**
5.1	46742100	46472000	48007700	00260000
5.6	**46742200**	**46472100**	**48007800**	**00260600**
6.2	46742300	46472200	48007900	00261200
6.8	**46742400**	**46472300**	**48008000**	**00261800**
7.5	46742500	46472400	48008100	00262400
8.2	**46742600**	**46472500**	**48008200**	**00263000**
9.1	46742700	46472600	48008300	00263600
10.0	**46742800**	**46472700**	**48008400**	**00248400**
11.0	46742900	46472800	48008500	00249100
12.0	**46743000**	**46472900**	**48008600**	**00249800**
13.0	46743100	46473000	48008700	00250500
15.0	**46743200**	**46473100**	**48008800**	**00251200**
16.0	46743300	46473200	48008900	00251900
18.0	**46743400**	**46473300**	**48009000**	**00252600**
20.0	46743500	46473400	48009100	00253300
22.0	**46743600**	**46473500**	**48009200**	**00254000**
24.0	46743700	46473600	48009300	00254700
27.0	**46743800**	**46473700**	**48009400**	**00255300**
30.0	46743900	46473800	48009500	00255900
33.0	**46744000**	**46473900**	**48009600**	**00256500**
36.0	46744100	46474000	48009700	00257100
39.0	**46744200**	**46474100**	**48009800**	**00257700**
43.0	46744300	46474200	48009900	00258300
47.0	**46744400**	**46474300**	**48010000**	**00258900**
51.0	46744500	46474400	48010100	00259500
56.0	**46744600**	**46474500**	**48010200**	**00260100**
62.0	46744700	46474600	48010300	00260700
68.0	**46744800**	**46474700**	**48010400**	**00261300**
75.0	46744900	46474800	48010500	00261900
82.0	**46745000**	**46474900**	**48010600**	**00262500**
91.0	46745100	46475000	48010700	00263100
100.0	**46745200**	**46475100**	**48010800**	**00248500**
110.0	46745300	46475200	48010900	00249200
120.0	**46745400**	**46475300**	**48011000**	**00249900**
130.0	46745500	46475400	48011100	00250600
150.0	**46745600**	**46475500**	**48011200**	**00251300**
160.0	46745700	46475600	48011300	00252000
180.0	**46745800**	**46475700**	**48011400**	**00252700**
200.0	46745900	46475800	48011500	00253400
220.0	**46746000**	**46475900**	**48011600**	**00254100**
240.0	46746100	46476000	48011700	00254800
270.0	**46746200**	**46476100**	**48011800**	**00255400**
300.0	46746300	46476200	48011900	00256000
330.0	**46746400**	**46476300**	**48012000**	**00256600**

1-2. Carbon Resistor 1/6W, Tolerance ±5% (J)
1-3. Carbon Resistor 1/4W, Tolerance ±2% (G)
1-4. Carbon Resistor 1/3W, Tolerance ±5% (J)

Value (Ω)	CHIP 1/8W	C.R. 1/6W	C.R. 1/4W	C.R. 1/3W
	Stock No.	Stock No.	Stock No.	Stock No.
360.0	46746500	46476400	48012100	00257200
390.0	**46746600**	**46476500**	**48012200**	**00257800**
430.0	46746700	46476600	48012300	00258400
470.0	**46746800**	**46476700**	**48012400**	**00259000**
510.0	46746900	46476800	48012500	00259600
560.0	**46747000**	**46476900**	**48012600**	**00260200**
620.0	46747100	46470000	48012700	00260800
680.0	**46747200**	**46499600**	**48012800**	**00261400**
750.0	46747300	46477100	48012900	00262000
820.0	**46747400**	**46477200**	**48013000**	**00262600**
910.0	46747500	46477300	48013100	00263200
1.0k	**46747600**	**46477400**	**48013200**	**00248600**
1.1k	46747700	46477500	48013300	00249300
1.2k	**46747800**	**46477600**	**48013400**	**00250000**
1.3k	46747900	46477700	48013500	00250700
1.5k	**46748000**	**46477800**	**48013600**	**00251400**
1.6k	46748100	46477900	48013700	00252100
1.8k	**46748200**	**46478000**	**48013800**	**00252800**
2.0k	46748300	46478100	48013900	
2.2k	**46748400**	**46478200**	**48014000**	**00254200**
2.4k	46748500	46478300	48014100	00254900
2.7k	**46748600**	**46478400**	**48014200**	**00255500**
3.0k	46748700	46478500	48014300	00256100
3.3k	**46748800**	**46478600**	**48014400**	**00256700**
3.6k	46748900	46478700	48014500	00257300
3.9k	**46749000**	**46478800**	**48014600**	**00257900**
4.3k	46749100	46478900	48014700	00258500
4.7k	**46749200**	**46479000**	**48014800**	**00259100**
5.1k	46749300	46479100	48014900	00259700
5.6k	**46749400**	**46479200**	**48015000**	**00260300**
6.2k	46749500	46479300	48015100	00260900
6.8k	**46749600**	**46479400**	**48015200**	**00261500**
7.5k	46749700	46479500	48015300	00262100
8.2k	**46749800**	**46479600**	**48015400**	**00262700**
9.1k	46749900	46479700	48015500	00263300
10.0k	**46750000**	**46479800**	**48015600**	**00248700**
11.0k	46750100	46479900	48015700	00249400
12.0k	**46750200**	**46480000**	**48015800**	**00250100**
13.0k	46750300	46480100	48015900	00250800
15.0k	**46750400**	**46480200**	**48016000**	**00251500**
16.0k	46750500	46480300	48016100	00252200
18.0k	**46750600**	**46480400**	**48016200**	**00252900**
20.0k	46750700	46480500	48016300	00253600
22.0k	**46750800**	**46480600**	**48016400**	**00254300**
24.0k	46750900	46480700	48016500	00255500
27.0k	**46751000**	**46480800**	**48016600**	**00255600**
30.0k	46751100	46480900	48016700	00256200
33.0k	**46751200**	**46481000**	**48016800**	**00256800**
36.0k	46751300	46481100	48016900	00257400
39.0k	**46751400**	**46481200**	**48017000**	**00258000**
43.0k	46751500	46481300	48017100	00258600
47.0k	**46751600**	**46481400**	**48017200**	**00259200**
51.0k	46751700	46481500	48017300	00259800
56.0k	**46751800**	**46481600**	**48017400**	**00260400**
62.0k	46751900	46481700	48017500	00261000
68.0k	**46752000**	**46481800**	**48017600**	**00261600**
75.0k	46752100	46481900	48017700	00262200
82.0k	**46752200**	**46482000**	**48017800**	**00262800**
91.0k	46752300	46482100	48017900	00263400
100.0k	**46752400**	**46482200**	**48018000**	**00248800**
110.0k	46752500	46482300	48018100	00249500
120.0k	46752600	46482400	48018200	00250200

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Value (Ω)	CHIP 1/8W	C.R. 1/6W	C.R. 1/4W	C.R. 1/3W
	Stock No.	Stock No.	Stock No.	Stock No.
130.0k	46752700	46482500	48018300	00250900
150.0k	**46752800**	**46482600**	**48018400**	**00251600**
160.0k	46752900	46482700	48018500	00252300
180.0k	**46753000**	**46482800**	**48018600**	**00253000**
200.0k	46753100	46482900	48018700	00253700
220.0k	**46753200**	**46483000**	**48018800**	**00254400**
240.0k	46753300	46483100	48018900	00255100
270.0k	**46753400**	**46483200**	**48019000**	**00255700**
300.0k	46753500	46483300	48019100	00256300
330.0k	**46753600**	**46483400**	**48019200**	**00256900**
360.0k	46753700	46483500	48019300	00257500
390.0k	**46753800**	**46483600**	**48019400**	**00258100**
430.0k	46753900	46483700	48019500	00258700
470.0k	**46754000**	**46483800**	**48019600**	**00259300**
510.0k	46754100	46483900	48019700	00259900
560.0k	**46754200**	**46484000**	**48019800**	**00260500**
620.0k	46754300	46484100	48019900	00261100

Value (Ω)	CHIP 1/8W	C.R. 1/6W	C.R. 1/4W	C.R. 1/3W
	Stock No.	Stock No.	Stock No.	Stock No.
680.0k	**46754400**	**46484200**	**48020000**	**00261700**
750.0k	46754500	46484300	48020100	00262300
820.0k	**46754600**	**46484400**	**48020200**	**00262900**
910.0k	46754700	46484500	48020300	00263500
1.0M	**46754800**	**46484600**	**48020400**	**00248900**
1.1M			00225900	00249600
1.2M			00226600	00250300
1.3M			00227300	00251000
1.5M			00228000	00251700
1.6M			00228700	00252400
1.8M			00229400	00253100
2.0M			00230100	00253800
2.2M			00230800	00254500
2.4M			00231500	00594200
2.7M			00232200	00594300
3.0M			00232900	00594400
3.3M			00233600	00594500

5. Non-Inflamable Resistor 1/2W, Tolerance ±5% (J)

6. Non-Inflamable Resistor 1W, Tolerance ±5% (J)

Value (Ω)	N.I. 1/2W	N.I. 1W	Value (Ω)	N.I. 1/2W	N.I. 1W	Value (Ω)	N.I. 1/2W	N.I. 1W
	Stock No.	Stock No.		Stock No.	Stock No.		Stock No.	Stock No.
0.22	46400000	46239200	18.0	46402300	46241500	1.5k	46404600	46243800
0.27	46400100	46239300	22.0	46402400	46241600	1.8k	46404700	46243900
0.33	46400200	46239400	27.0	46402500	46241700	2.2k	46404800	46244000
0.39	46400300	46239500	33.0	46402600	46241800	2.7k	46404900	46244100
0.47	46400400	46239600	39.0	46402700	46241900	3.3k	46405000	46244200
0.56	46400500	46239700	47.0	46402800	46242000	3.9k	46405100	46244300
0.68	46400600	46239800	56.0	46402900	46242100	4.7k	46405200	46244400
0.82	46400700	46239900	68.0	46403000	46242200	5.6k	46405300	46244500
1.0	46400800	46240000	82.0	46403100	46242300	6.8k	46405400	46244600
1.2	46400900	46240100	100.0	46403200	46242400	8.2k	46405500	46244700
1.5	46401000	46240200	120.0	46403300	46242500	10.0k	46405600	46244800
1.8	46401100	46240300	150.0	46403400	46242600	12.0k	46405700	46244900
2.2	46401200	46240400	180.0	46403500	46242700	15.0k	46405800	46245000
2.7	46401300	46240500	220.0	46403600	46242800	18.0k	46405900	46245100
3.3	46401400	46240600	270.0	46403700	46242900	22.0k	46406000	46245200
3.9	46401500	46240700	330.0	46403800	46243000	27.0k	46406100	46245300
4.7	46401600	46240800	390.0	46403900	46243100	33.0k	46406200	46245400
5.6	46401700	46240900	470.0	46404000	46243200	39.0k	46406300	46245500
6.8	46401800	46241000	560.0	46404100	46243300	47.0k	46406400	46245600
8.2	46401900	46241100	680.0	46404200	46243400	56.0k	46406500	46245700
10.0	46402000	46241200	820.0	46404300	46243500	68.0k	46406600	46245800
12.0	46402100	46241300	1.0k	46404400	46243600	82.0k		46245900
15.0	46402200	46241400	1.2k	46404500	46243700	100.0k		46246000

1-7. Cement Resistor 2W, Tolerance ±10% (K)
1-8. Cement Resistor 5W, Tolerance ±10% (K)

Value (Ω)	Ce. R. 2W Stock No.	Ce. R. 5W Stock No.	Value (Ω)	Ce. R. 2W Stock No.	Ce. R. 5W Stock No.	Value (Ω)	Ce. R. 2W Stock No.	Ce. R. 5W Stock No.
0.15	00068000		12.0	00067700	00078900	1.0k		00095000
0.18	00068300		15.0	00067900	00079200	1.2k		00095200
0.22	00068600	00080000	18.0	00068200	00079500	1.5k		00095400
0.27	00068900	00080400	22.0	00068500	00079800	1.8k		00095600
0.33	00069200	00080700	27.0	00068800	00080200	2.2k		00095800
0.39	00069500	00081000	33.0	00069100	00080600	2.7k		00096000
0.47	00069800	00081300	39.0	00069400	00080900	3.3k		00096300
0.56	00070100	00081600	47.0	00069700	00081200	3.9k		00096600
0.68	00070400	00082000	56.0	00070000	00081500	4.7k		00096900
0.82	00070700	00082300	68.0	00070300	00081800	5.6k		00097200
1.0	00067600	00078800	82.0	00070600	00082200	6.8k		00097400
1.2	00067800	00079100	100.0	00067500	00078700	8.2k		00097600
1.5	00068100	00079400	120.0		00079000	10.0k		00095100
1.8	00068400	00079700	150.0	00092000	00079300	12.0k		00095300
2.2	00068700	00080100	180.0		00079600	15.0k		00095500
2.7	00069000	00080500	220.0		00079900	18.0k		00095700
3.3	00069300	00080800	270.0		00080300	22.0k		00095900
3.9	00069600	00081100	330.0		00096200	27.0k		00096100
4.7	00069900	00081400	390.0		00096500	33.0k		00096400
5.6	00070200	00081700	470.0		00096800	39.0k		00096700
6.8	00070500	00082100	560.0	00092100	00097100	47.0k		00097000
8.2	00070800	00082400	680.0		00081900			
10.0	00067400	00078600	820.0		00097500			

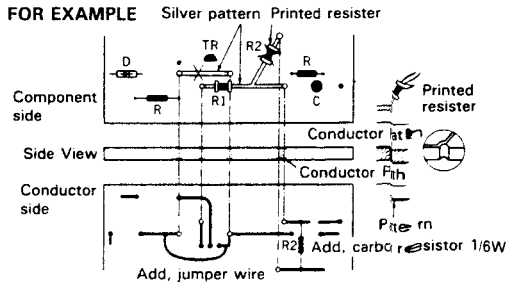
1-9. Fusing Resistor 1/4W, Tolerance ±5% (J)
1-10. Fusing Resistor 1/2W, Tolerance ±5% (J)

Value (Ω)	F. R. 1/4W Stock No.	F. R. 1/2W Stock No.	Value (Ω)	F. R. 1/4W Stock No.	F. R. 1/2W Stock No.	Value (Ω)	F. R. 1/4W Stock No.	F. R. 1/2W Stock No.
1.0		00120000	12.0	48786500	00120100	150.0	48787800	00120500
1.2		00120300	15.0	48786600	00120400	180.0	48787900	00120800
1.5		00120600	18.0	48786700	00120700	220.0	48788000	00121100
1.8		00120900	22.0	48786800	00121000	270.0	48788100	00121400
2.2		00121200	27.0	48786900	00121300	330.0	48788200	00121700
2.7		00121500	33.0	48787000	00121600	390.0	48788300	00122000
3.3		00121800	39.0	48787100	00121900	470.0	48788400	00122300
3.9		00122100	47.0	48787200	00122200	560.0		00122600
4.7	48786000	00122400	56.0	48787300	00122500	680.0		00122900
5.6	48786100	00122700	68.0	48787400	00122800	820.0		00123200
6.8	48786200	00123000	82.0	48787500	00123100	1.0k		00119900
8.2	48786300	00123300	100.0	48787600	00119800			
10.0	48786400	00119700	120.0	48787700	00120200			

• Notice for replacement of printed resistor and silver pattern

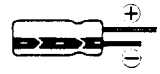
The printed resistor of carbon resine and the printed silver foil pattern are coated on some printed circuit board.
And it is impossible to replace those pats. Therefore, please keep following notice when repairing or ordering parts.

1. When repairing the printed resistor, cut off center portion of the printed resistor to make complete open circuit.
   Then solder 1/6W type carbon resistor between copper patterns at both ends of the printed resistor.
2. When repairing the printed silver pattern, solder a jumper wire between copper patterns at both ends of the printed silver pattern.
3. As conductor path is easy to break, do not put any wires through holes of conductor path.
4. Do not heat up any conductor path.



2. CAPACITORS

2-1. Electrolytic Capacitor 6.3V ~ 100V, Polar Type



• There are three sorts of case blue, black and gray.

Value (μF)	6.3V	10V	16V	25V	35V	50V	63V	100V
	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.
0.1						48463300		48467100
0.15						48463400		48467200
0.22						48463500		48467300
0.33						48463600		48467400
0.47						48463700		48467500
0.68						48463800		48467600
1.0						48463900		48467700
2.2						48464000		48467800
3.3						48464100	48465200	48467900
4.7				48461000	48462200	48464200	48465300	48468000
10.0			48459800	48461100	48462300	48464300	48465400	48468100
22.0			48459900	48461200	48462400	48464400	48465500	48468200
33.0		48458700	48460000	48461300	48462500	48464500	48465600	48468300
47.0	48457600	48458800	48460100	48461400	48462600	48464600	48465700	48468400
100.0	48457700	48458900	48460200	48461500	48462700	48464700	48465800	48468500
220.0	48457800	48459000	48460300	48461600	48462800	48464800	48465900	48468600
330.0	48457900	48459100	48460400	48461700	48462900	48464900	48466000	48468700
470.0	48458000	48459200	48460500	48461800	48463000	48465000	48466100	48468800
1000.0	48458100	48459300	48460600	48461900	48463100	48465100	48466200	
2200.0	48458200	48459400	48460700	48462000	48463200			
3300.0	48458300	48459500	48460800	48462100				
4700.0	48458400	48459600	48460900					
6800.0	48458500	48459700						
10000.0	48458600							

2-2. Correspond 105°C Electrolytic Capacitor 6.3V ~ 100V, Small Polar Type

Value (μF)	6.3V	10V	16V	25V	35V	50V	63V	80V	100V
	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.
0.1									46308500
0.15									46308600
0.22									46308700
0.33									46308800
0.47									46308900
0.68									46309000
1.0						46301100			46309100
2.2						46301200			46309200
3.3						46301300			46309300
4.7						46301400			46309400
10						46301500	46304500	46306700	46309500
22				46296500	46298900	46301600	46304600	46306800	46309600
33			46294100	46296600	46299000	46301700	46304700	46306900	46309700
47		46291700	46294200	46296700	46299100	46301800	46304800	46307000	46309800
100	46289300	46291800	46294300	46296800	46299200	46301900	46304900	46307100	46309900
220	46299400	46291900	46294400	46296900	46299300	46302000	46305000	46307200	46310000
330	46289500	46292000	46294500	46297000	46299400	46302100	46305100	46307300	46310100
470	46289600	46292100	46294600	46297100	46299500	46302200	46305200	46307400	46310200
1000	46289700	46292200	46294700	46297200	46299600	46302300	46305300		
2200	46289800	46292300	46294800	46297300	46299700				
3300	46289900	46292400	46294900	46297400					
4700	46290000	46292500	46295000						
6800	46290100	46292600							
10000	46290200								

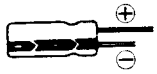
2-3. 5L Type Electrolytic Capacitor 4V ~ 50V

Value (μF)	4V	6.3V	10V	16V	25V	35V	50V
	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.
0.1							46712700
0.15							46712800
0.22							46712900
0.33							46713000
0.47							46713100
0.68							46713200
1.0							46713300
1.5							46713400
2.2						46712000	46713500
3.3					46711300	46712100	46713600
4.7				46710600	46711400	46712200	46713700
6.8			46709900	46710700	46711500	46712300	46713800
10		46709200	46710000	46710800	46711600	46712400	46713900
15	46708500	46709300	46710100	46710900	46711700	46712500	
22	46708600	46709400	46710200	46711000	46711800	46712600	
33	46708700	46709500	46710300	46711100	46711900		
47	46708800	46709600	46710400	46711200			
68	46708900	46709700	46710500				
100	46709000	46709800					
220	46709100						

2-4. 7L Type Electrolytic Capacitor 4V ~ 50V

Value (μF)	4V	6.3V	10V	16V	25V	35V	50V
	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.
0.1							46276100
0.15							46845300
0.22							46276200
0.33							46276300
0.47							46276400
0.68							46845400
1.0							46276500
2.2							46276600
3.3						46844600	46276700
4.7					46843900	46844700	46276800
10				46275600	46844100	46844900	46276900
22		46842500	46843100	46275700	46844300	46845100	46845800
33	46842000	46842600	46843200	46275800	46844400	46845200	
47	46842100	46842700	46843300	46275900	46844500		
100	46842300	46842900	46843500	46276000			
220	46842400						

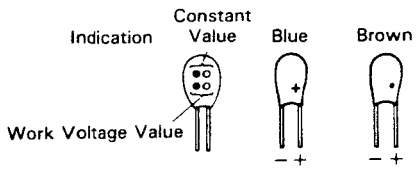
2-5. Low Leak Electrolytic Capacitor 50V, Polar Type <Tolerance ±20% (M)>



•The case color is only orange.

Value (μF)	Stock No.	Value (μF)	Stock No.	Value (μF)	Stock No.	Value (μF)	Stock No.
0.1	46030500	1.0	46030800	10.0	46031400	150.0	46032000
0.15	46424500	1.5	46030900	22.0	46031500	220.0	46032100
0.22	46030600	2.2	46031000	33.0	46031600	330.0	46032200
0.33	46424700	3.3	46031100	47.0	46031700	470.0	46032300
0.47	46030700	4.7	46031200	68.0	46031800		
0.68	46424900	6.8	46031300	100.0	46031900		

2-6. Tantalum Capacitor 35V, Tolerance ±20% (M)



•There are blue & brown type of tantalum capacitor, however both type can be used commonly.

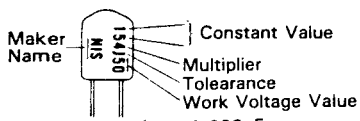
Value (μF)	Stock No.	Value (μF)	Stock No.	Value (μF)	Stock No.
0.068	00323700	0.47	00323500	3.3	00323400
0.1	00322700	0.68	00323800	4.7	00323600
0.15	00322900	1.0	00322800	6.8	00323900
0.22	00323100	1.5	00323000	10.0	00322600
0.33	00323300	2.2	00323200		

2-7. Mylar Capacitor 50V, Tolerance ±5% (J) <Small Type>

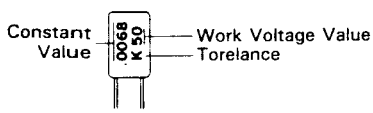
Value (μF)	Stock No.	Value (μF)	Stock No.	Value (μF)	Stock No.	Value (μF)	Stock No.	Value (μF)	Stock No.
470pF	48320000	0.0024	46688000	0.0082	48323000	0.030	46690600	0.10	48325600
560pF	48320200	0.0027	48321800	0.0091	46689400	0.033	48324400	0.11	46692000
680pF	48320400	0.0030	46688200	0.010	48323200	0.036	46690800	0.12	46692100
820pF	48320600	0.0033	48322000	0.011	46689600	0.039	48324600	0.13	46692200
0.0010μF	48320800	0.0036	46688400	0.012	48323400	0.043	46691000	0.15	46692300
0.0011	46687200	0.0039	48322200	0.013	46689800	0.047	48324800	0.16	46692400
0.0012	48321000	0.0043	46688600	0.015	48323600	0.051	46691200	0.18	46692500
0.0013	46687400	0.0047	48322400	0.016	46690000	0.056	48325000	0.20	46692600
0.0015	48321200	0.0051	46688800	0.018	48323800	0.062	46691400	0.22	46692700
0.0016	46687600	0.0056	48322600	0.020	46690200	0.068	48325200		
0.0018	48321400	0.0062	46689000	0.022	48324000	0.075	46691600		
0.0020	46687800	0.0068	48322800	0.024	46690400	0.082	48325400		
0.0022	48321600	0.0075	46689200	0.027	48324200	0.091	46691800		

2-8. Film (Mylar) Capacitor 100V, Tolerance ±5% (J)

*Use capacitor with of 10V Type in lieu of one with 0.3V Type.



➡15 X 10^4 = 150,000pF = 0.15μF (±5%, 50V)



➡0.0068μF (±10%, 50V)

Value (μF)	Stock No.	Value (μF)	Stock No.	Value (μF)	Stock No.	Value (μF)	Stock No.
0.001	00403800	0.0051	00405500	0.027	00407200	0.13	00408900
0.0011	00403900	0.0056	00405600	0.03	00407300	0.15	00409000
0.0012	00404000	0.0062	00405700	0.033	00407400	0.16	00409100
0.0013	00404100	0.0068	00405800	0.036	00407500	0.18	00409200
0.0015	00404200	0.0075	00405900	0.039	00407600	0.2	00409300
0.0016	00404300	0.0082	00406000	0.043	00407700	0.22	00409400
0.0018	00404400	0.0091	00406100	0.047	00407800	0.24	00409500
0.002	00404500	0.01	00406200	0.051	00407900	0.27	00409600
0.0022	00404600	0.011	00406300	0.056	00408000	0.30	00409700
0.0024	00404700	0.012	00406400	0.062	00408100	0.33	00409800
0.0027	00404800	0.013	00406500	0.068	00408200	0.36	00409900
0.003	00404900	0.015	00406600	0.075	00408300	0.39	00410000
0.0033	00405000	0.016	00406700	0.082	00408400	0.43	00410100
0.0036	00405100	0.018	00406800	0.091	00408500	0.47	00410200
0.0039	00405200	0.02	00406900	0.1	00408600		
0.0043	00405300	0.022	00407000	0.11	00408700		
0.0047	00405400	0.024	00407100	0.12	00408800		

2-9. Metalized Mylar Capacitor 63V, Tolerance ±10% (K) <Small Type>

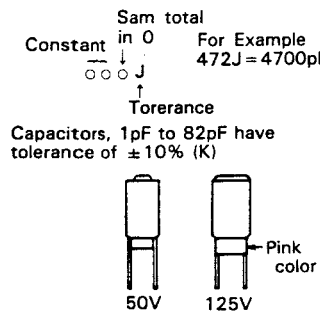
Value (μF)	Stock No.	Value (μF)	Stock No.	Value (μF)	Stock No.	Value (μF)	Stock No.
0.1	48477900	0.22	48478300	0.47	48478700	1.0	48479100
0.12	48478000	0.27	48478400	0.56	48478800		
0.15	48478100	0.33	48478500	0.68	48478900		
0.18	48478200	0.39	48478600	0.82	48479000		

2-10. Polypropylene Film Capacitor 100V, Tolerance ±5% (J)

Value (μF)	Stock No.	Value (μF)	Stock No.	Value (μF)	Stock No.	Value (μF)	Stock No.	Value (μF)	Stock No.
0.0001	46645100	0.00051	46646800	0.0027	46648500	0.013	46650200	0.068	46651900
0.00011	46645200	0.00056	46646900	0.003	46648600	0.015	46650300	0.075	46652000
0.00012	46645300	0.00062	46647000	0.0033	46648700	0.016	46650400	0.082	46652100
0.00013	46645400	0.00068	46647100	0.0036	46648800	0.018	46650500	0.091	46652200
0.00015	46645500	0.00075	46647200	0.0039	46648900	0.02	46650600	0.1	46652300
0.00016	46645600	0.00082	46647300	0.0043	46649000	0.022	46650700	0.11	46652400
0.00018	46645700	0.00091	46647400	0.0047	46649100	0.024	46650800	0.12	46652500
0.00020	46645800	0.001	46647500	0.0051	46649200	0.027	46650900	0.13	46652600
0.00022	46645900	0.0011	46647600	0.0056	46649300	0.03	46651000	0.15	46652700
0.00024	46646000	0.0012	46647700	0.0062	46649400	0.033	46651100	0.16	46652800
0.00027	46646100	0.0013	46647800	0.0068	46649500	0.036	46651200	0.18	46652900
0.0003	46646200	0.0015	46647900	0.0075	46649600	0.039	46651300	0.20	46653000
0.00033	46646300	0.0016	46648000	0.0082	46649700	0.043	46651400	0.22	46653100
0.00036	46646400	0.0018	46648100	0.0091	46649800	0.047	46651500		
0.00039	46646500	0.002	46648200	0.01	46649900	0.051	46651600		
0.00043	46646600	0.0022	46648300	0.011	46650000	0.056	46651700		
0.00047	46646700	0.0024	46648400	0.012	46650100	0.062	46651800		

2-11. Polystyrene Capacitor (Vertical Type) 50V, Tolerance ±5% (J)
2-12. Polystyrene Capacitor (Vertical Type) 125V, Tolerance ±5% (J)

Indication



Value (pF)	50V (J) Stock No.	125V (J) Stock No.	Value (pF)	50V (J) Stock No.	125V (J) Stock No.	Value (pF)	50V (J) Stock No.	125V (J) Stock No.
1		46067300	130	00357900	00365700	1300	00358000	00365800
2		46067400	150	00358100	46070800	1500	00358200	46642900
3		46067500	160	00358300	00366100	1600	00358400	00366200
4		46067600	180	00358600	46070900	1800	00358700	48494000
5		46067700	200	00358800	00366500	2000	00358900	00366600
6		46067800	220	00359000	46071000	2200	00359100	48494100
7		46067900	240	00359200	00366900	2400	00359300	00367000
8		46068000	270	00359400	46071100	2700	00359500	48494200
9		46068100	300	00359600	00367300	3000	00359700	00367400
10		46068200	330	00359800	46071200	3300	00359900	48494300
12		46068400	360	00360000	00367700	3600	00350100	00367800
15		46068600	390	00360200	46071300	3900	00363000	48494400
18		46068800	430	00360400	00368100	4300	00360500	00368200
22		46069000	470	00360600	46071400	4700	00360700	48494500
27		46069200	510	00360900	00368600	5100	00361000	00368700
33		46069400	560	00361100	46071500	5600	00361200	48494600
39		46069600	620	00361300	00369000	6200	00361400	00369100
47		46069800	680	00361500	46071600	6800	00361600	48494700
56		46070000	750	00361700	00369500	7500	00361800	00369600
68		46070200	820	00361900	46071700	8200	00362000	48494800
82		46070400	910	00362100	00369900	9100	00362200	00370000
100	00357100	46070600	1000	00357200	46071800	10000	00357300	48494900
110	00357400	00365200	1100	00357500	00365300	11000	00357600	00365400
120	00357700	46060700	1200	00357800	48493800			

2-13. Ceramic Capacitor <Barrie Layer Capacitor> 25V, Tolerance ±10% (K)

Value (pF)	Stock No.	Indication	Value (pF)	Stock No.	Indication	Value (pF)	Stock No.	Indication	Value (pF)	Stock No.	Indication
1000	07211300	102k	3900	07212700	392k	15000	07213400	153k	56000	07214100	563k
1200	07212100	122k	4700	07212800	472k	18000	07213500	183k	68000	07214200	683k
1500	07212200	152k	5600	07212900	562k	22000	07213600	223k	82000	07214300	823k
1800	07212300	182k	6800	07213000	682k	27000	07213700	273k	100000	07214400	104k
2200	07212400	222k	8200	07213100	822k	33000	07213800	333k	120000	07214500	124k
2700	07212500	272k	10000	07213200	103k	39000	07213900	393k	150000	07214600	154k
3300	07212600	332k	12000	07213300	123k	47000	07214000	473k			

2-14. Ceramic Capacitor 50V (Standard Type)

•No color indication on top.
For example 1.5pF

Value (pF)	Stock No.	Indication	Value (pF)	Stock No.	Indication	Value (pF)	Stock No.	Indication
1 (±0.5)	00381600	1	22	00382500	22	270	00383000	270pF
1.5	00382100	1.5	27	00382900	27	330	00383300	330pF
2	00382400	2	33	00383200	33	390	00383500	390pF
3	00383100	3	39	00383400	39	470	00383800	470pF
4	00383600	4	47	00383700	47pF	560	46076600	560pF
5	00384100	5	56	00384200	56pF	680	46076700	680pF
6	00384300	6	68	00384400	68pF	820	46076800	820pF
7	00384500	7	82	00384700	82pF	1000 (+80 −20%)	00381400	0.001μF
8	00384600	8	91	07251800	91pF	2200	00382700	0.0022μF
9	00384800	9	100	00381300	100pF	4700	00383900	0.0047μF
10	00381200	10	120	00381800	120pF	10000	00381500	0.01μF
12 (±10%)	00381700	12	150	00382000	150pF	22000	00382800	0.022μF
15	00381900	15	180	00382300	180pF	47000	00384000	0.047μF
18	00382200	18	220	00382600	220pF			

2-15. Ceramic Capacitor 50V, Temprature Compensation

1) N.P.O. No variation with temperature.
P.P.M. (Parts Par Million) 1/1,000,000.

2) The ordinary ceramic capacitor increase its capacitance with temperature rise, however, capacitor for temperature compensation decrease its capacitance or does not vary with temperature rise.

For example:

$$\text{Capacitance Variation (pF)} = \frac{-150(t-25°C)}{1 \times 10^6} \times C\ (pF)$$

[Orange type]

4) Indications of capacitors are same as those of standard capacitors.

	Black NPO	Red −80PPM	Orange −150PPM	Yellow −220PPM	Green −330PPM	Blue −470PPM	Purple −750PPM
Value (pF)	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.	Stock No.
0.5	48218700						
1	00388800						
1.5	00388900						
2	00396300						
3	00396400	00397100	00397800	00398500	00399200	00399900	00400600
4	00396500	00397200	00397900	00398600	00399300	00400000	00400700
5	00396600	00397300	00398000	00398700	00399400	00400100	00400800
6	00386700	00397400	00398100	00398800	00399500	00400200	00400900
7	00396800	00397500	00398200	00398900	00399600	00400300	00401000
8	00396900	00397600	00398300	00399000	00399700	00400400	00401100
9	00397000	00397700	00398400	00399100	00399800	00400500	00401200
10	00389000	00389500	00390400	00391200	00392200	00393100	00394300
11	00389100	00389600	00390500	00391300	00392300	00393200	00394400
12	00386900	00389700	00390600	00391400	00392400	00393300	00394500
13	00389200	00389800	00390700	00391500	00392500	00393400	00394600
15	00387000	00389900	00390800	00391600	00392600	00393500	00394700
16	00389300	00388100	00388400	00391700	00392700	00393600	00394800
18	00387100	00390000	00390900	00391800	00388600	00393800	00394900
20	00389400	00388300	00391000	00391900	00392900	00393900	00395000
22	00387200	00390200	00391100	00392000	00393000	00394000	00395100
24	00387300						
27	00387400						00395400
33	00387500						00395300
39	00387600						00395200
43	48446900						
47	00387700						
56	00387800						
68	00387900						
82	00388000						
91	48447200						
100	00388100						
130	48445400						
150	48445700						
180	48446000						
200	48491300						
220	48446300						
240	48446600						
Tolerance	1~10P±0.02% 11P±5%	3~10P±0.25% 11P±5%					

2-16. Cylindrical Type Chip Component Ceramic Capacitor 50V, 25V, 16V (1pF ~ 1000pF, 50V/1200pF ~ 10000pF, 16V/22000pF, 25V)

Value (pF)	Stock No.	Tolerance	Value (pF)	Stock No.	Tolerance	Value (pF)	Stock No.	Tolerance	Value (pF)	Stock No.	Tolerance
1	48510000	M	15	48511600	J	68	48515200	J	1000	48516800	K
1.2	48510100	M	16	48511700	J	75	48515300	K	1200	48641000	M
1.5	48510200	M	18	48511800	J	82	48515400	K	1500	48641100	M
1.8	48510300	M	20	48511900	J	91	48515500	K	1800	48641200	M
2.2	48510400	K	22	48514000	J	100	48515600	K	2200	48641300	M
2.7	48510500	K	24	48514100	J	110	48515700	K	2700	48641400	M
3.3	48510600	K	27	48514200	J	150	48515800	K	3300	48641500	M
3.9	48510700	K	30	48514300	J	180	48515900	K	3900	48641600	M
4.7	48510800	K	33	48514400	J	220	48516000	K	4700	48641700	M
5.6	48510900	K	36	48514500	J	270	48516100	K	5600	48641800	M
6.8	48511000	K	39	48514600	J	330	48516200	K	6800	48641900	M
8.2	48511100	K	43	48514700	J	390	48516300	K	8200	48642000	M
10	48511200	J	47	48514800	J	470	48516400	K	10000	48642100	M
11	48511300	J	51	48514900	J	560	48516500	K	22000	48642200	Z
12	48511400	J	56	48515000	J	680	48516600	K			
13	48511500	J	62	48515100	J	820	48516700	K			

2-17. Chip Component Ceramic Capacitor 50V, 25V (1pF ~ 47000pF, 50V/56000pF, 25V)

Value (pF)	A	B	Stock No.	Value (pF)	A	B	Stock No.
1.0	C	K	46754900	68	J	H	46757900
1.5	C	K	46755000	75	J	H	46758000
2.0	C	K	46755100	82	J	H	46758100
3.0	C	J	46755200	91	J	H	46758200
4.0	C	H	46755300	100	J	H	46758300
5.0	C	H	46755400	110	J	H	46855000
6.0	D	H	46755500	120	J	H	46855100
7.0	D	H	46755600	130	J	H	46855200
8.0	D	H	46755700	150	J	H	46855300
9.0	D	H	46755800	160	J	H	46855400
10	D	H	46755900	180	J	H	46855500
11	J	H	46756000	200	J	H	46855600
12	J	H	46756100	220	J	H	46855700
13	J	H	46756200	240	J	H	46855800
15	J	H	46756300	270	J	H	46855900
16	J	H	46756400	300	J	H	46856000
18	J	H	46756500	330	J	H	46856100
20	J	H	46756600	360	J	H	46856200
22	J	H	46756700	390	J	H	46856300
24	J	H	46756800	430	J	H	46856400
27	J	H	46756900	470	J	H	46856500
30	J	H	46757000	510	J	H	46856600
33	J	H	46757100	560	J	H	46856700
36	J	H	46757200	620	J	H	46856800
39	J	H	46757300	680	J	H	46856900
43	J	H	46757400	750	J	H	46857000
47	J	H	46757500	820	J	H	46898300
51	J	H	46757600	910	J	H	46898400
56	J	H	46757700	1000	J	H	46837700
62	J	H	46757800				

Value (pF)	A	Stock No.	Value (pF)	A	Stock No.
1000	K	46794300	8200	K	46795400
1200	K	46794400	10000	K	46795500
1500	K	46794500	12000	K	46854200
1800	K	46794600	15000	K	46854300
2200	K	46794700	18000	K	46854400
2700	K	46794800	22000	K	46854500
3300	K	46794900	27000	K	46854600
3900	K	46795000	33000	K	46854700
4700	K	46795100	39000	K	46854800
5600	K	46795200	47000	K	46854900
6800	K	46795300	56000	K	46834100

A...Symbol of tolerance for capacitance

C	= ±0.25pF
D	= ±0.5pF
J	= ±5%

B...Symbol of tolerance for temperature characteristic

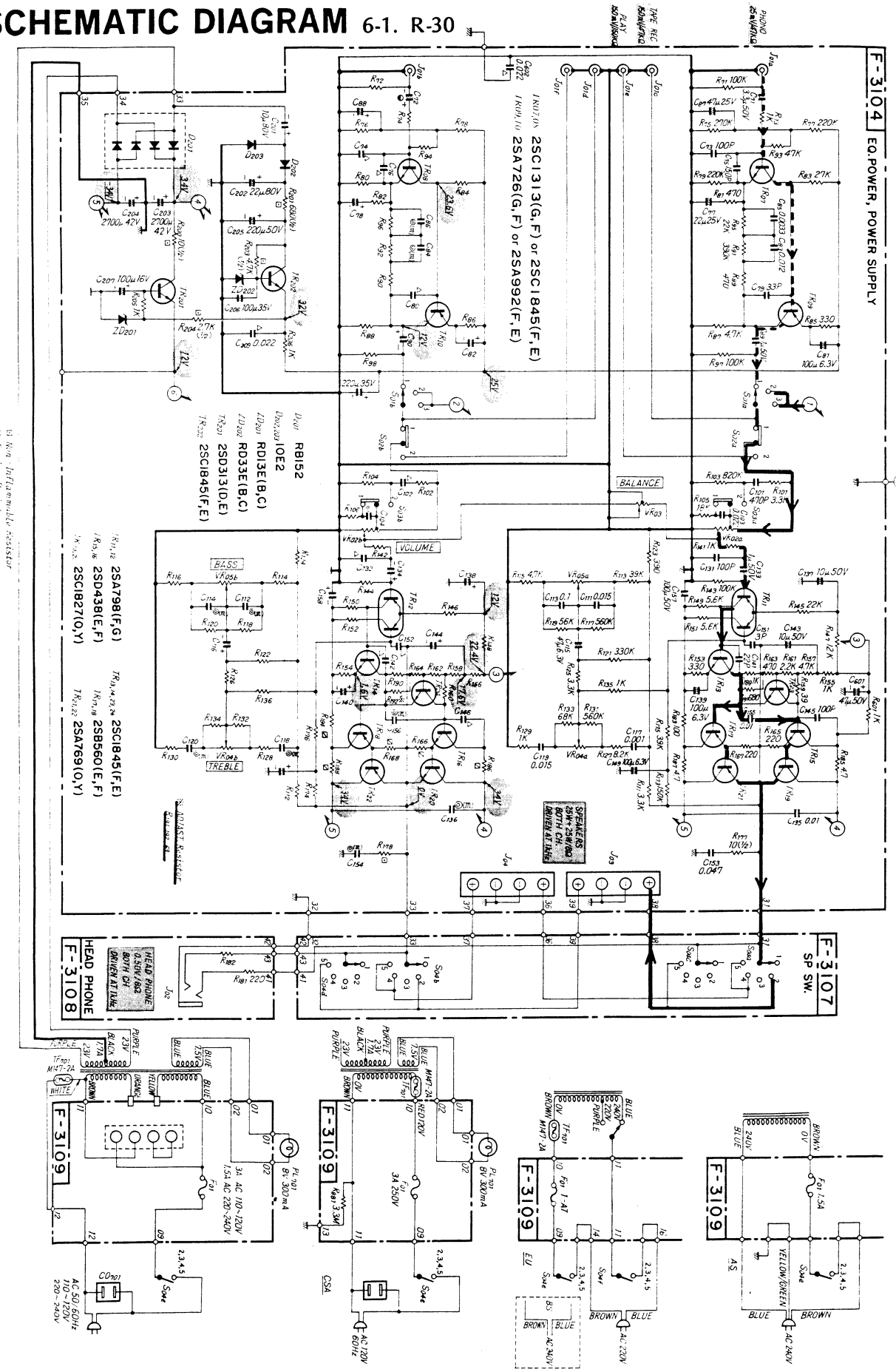
K	= ±250 PPM/°C
J	= ±120 PPM /°C
H	= ±60 PPM/°C

•Note: Replacing chip capacitors

1) Since there is no indication of capacity value on chip capacitors, refer to schematic diagram for discrimination of its value.
2) Special parts such as the temperature compensation, etc. are not listed on this list.
   In such case, please refer to service manual.
3) When replacing chip capacitors, use low wattage (about 20W ~ 30W) or special soldering iron for the chip parts in order to avoid unnecessory and/or heat damage.

- Design and specifications subject to change without notice for improvement
- La presentation et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles
- Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten

6. SCHEMATIC DIAGRAM 6-1. R-30



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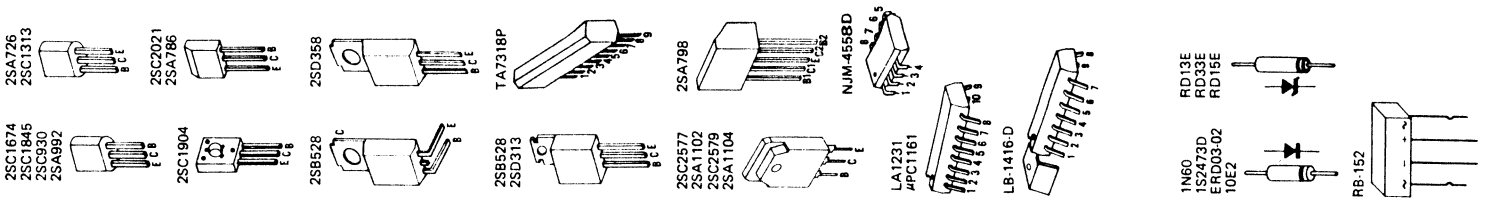

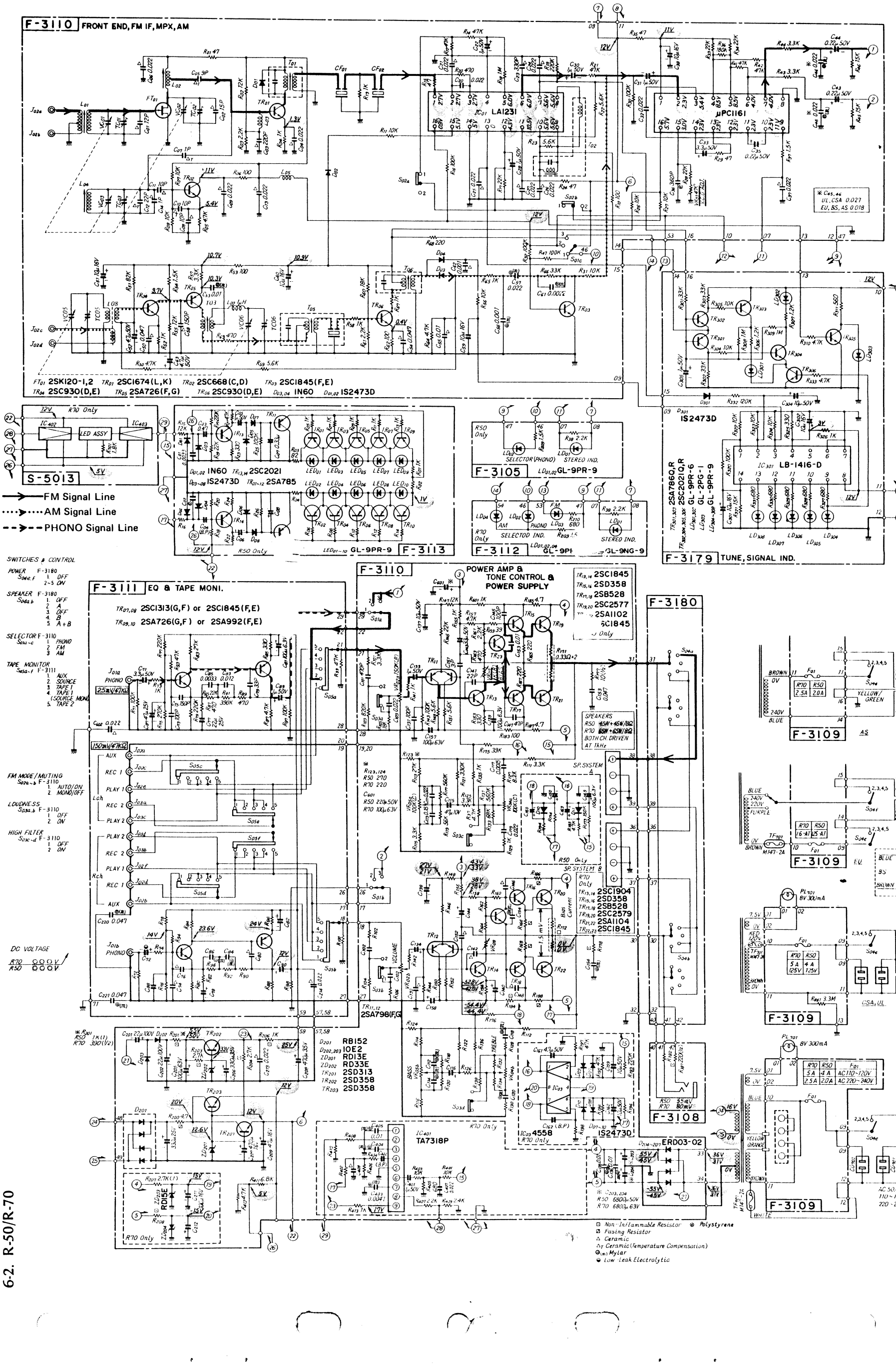

6-2. R-50/R-70